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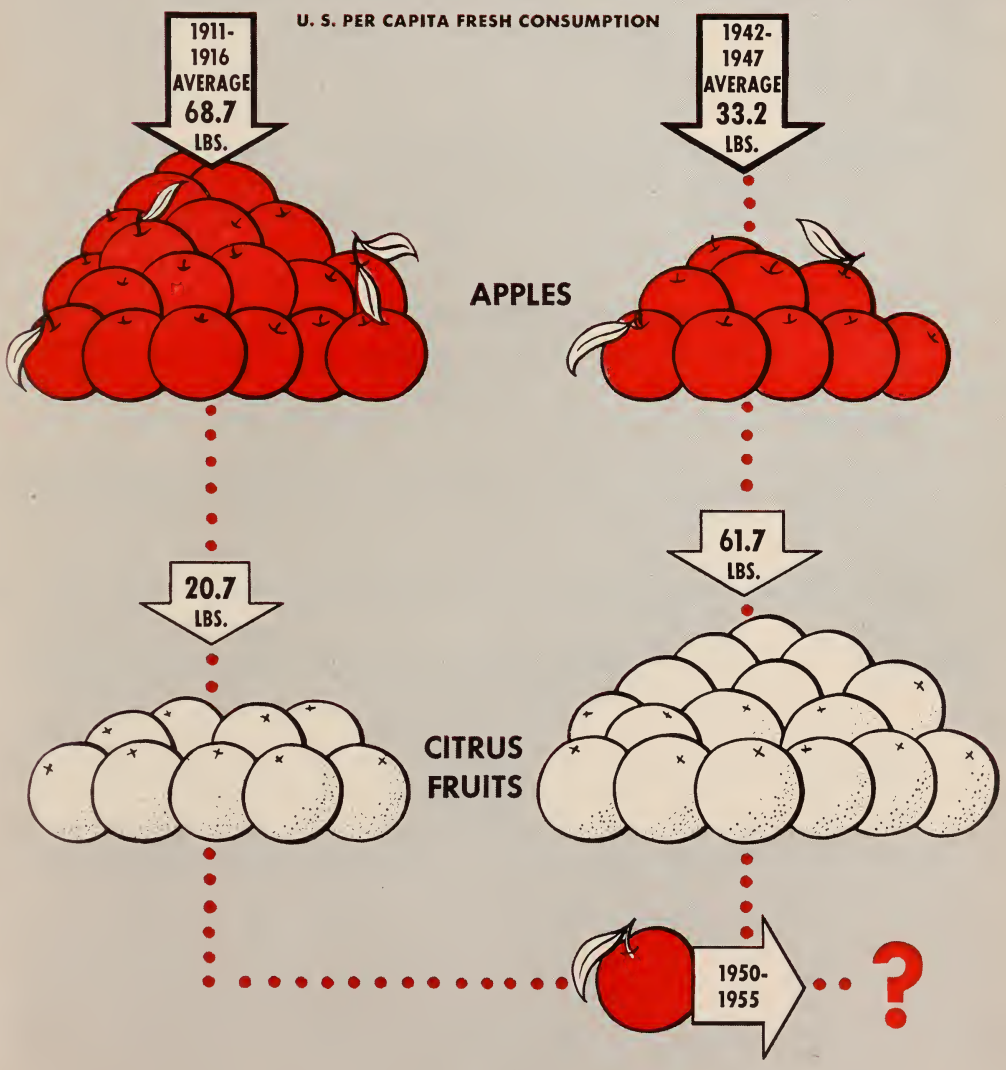
CALIFORNIA APPLES

SITUATION AND OUTLOOK: 1949

BURT B. BURLINGAME



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CALIFORNIA APPLES—amounting to 8% of the nation's apple production—are on the decline. Short term rises during World War II will not change long term trends. Some minor varieties (such as *Delicious*) have increased. But of California's two major varieties, *Gravensteins* have declined in acreage since 1930, although production did not reach its peak until 1945–1947; while *Yellow Newtowns* have declined in both acreage and production since 1930.

SITUATION

USE

Fresh Local Gravenstein consumption has increased with population rise, but out-of-state shipments still most important factor. Fall and Winter varieties meet increased competition from Northwest.

Dried Chief outlet for apples not sold for fresh use or canning. Has brought low returns generally.

Canned Outlet has risen to importance only in recent years.

Frozen Outlet important only since 1943. 1945 frozen surplus caused losses.

Crushed Lowest-priced outlet. Uses residue of crop.

PRICES California average lower than U. S. Prices rose during war, dropped sharply from peak.

COSTS AND EARNINGS Apple growing has shown poor profits except during war. Current earnings reduced substantially with drop in prices from wartime highs. Current costs are twice prewar costs.

WHAT UNFAVORABLE CONDITIONS have brought about these changes in California apple production? How can California growers make the best of their situation?

THIS CIRCULAR analyzes the situation and makes the following points:

OUTLOOK

Local Gravenstein consumption will rise. Exports will remain small, while interstate shipments not likely to increase. Fall and Winter varieties will meet intensified competition from Northwest, will decline with total production.

Will depend upon price and upon quantity not sold fresh or canned.

Upward trend will continue.

Likely to be of only minor importance in next few years.

Small proportion will not change if drying stays more profitable.

Price future depends on per cent sold fresh, consumer income, competition. Will average below high wartime levels.

Costs to remain high in foreseeable future. Reasonable earnings will be maintained by growers who practice wise orchard management, bring variety and quantity of production closer to consumption demands.

THE AUTHOR: Burt B. Burlingame is Associate Agriculturist in Agricultural Extension and Associate on the Giannini Foundation, Berkeley.

California Apples: Situation and Outlook, 1949

BURT B. BURLINGAME

Production Areas

California produces 8 per cent of nation's apple crop. 80 per cent of California's production concentrated in Watsonville and Sebastopol areas.

THE NATION

Apples are produced widely throughout the U. S. The U.S.D.A. Crop Reporting Board lists 35 states as having commercial areas of production for the period 1942–1947. Of these the State of Washington is by far the most important; California ranks fourth (table 1).

Table 1: PRODUCTION OF APPLES IN PRINCIPAL STATES[1]

State	1942–1947 average production	Per cent of United States total
	1,000 bushels	per cent
Washington	29,110	27.5
New York	13,178	12.5
Virginia	8,952	8.5
California	8,354	8.0
Pennsylvania	6,713	6.3
Michigan	6,272	5.9
West Virginia	3,704	3.5
Ohio	3,096	2.9
Illinois	3,034	2.9
Oregon	2,767	2.6
Others (25 states)	20,575	19.4
Total (35 states)	105,755	100.0

[1] Commercial areas.

THE WEST

Significant to California and other western growers is the fact that the 11 western states produce a total of 42% of the U. S. apple crop: Washington accounts for 27%, California 8%, other western and mountain states about 7%. Yet the population in this area is no more than 12% of the U. S. total. Thus a large proportion of the apples grown in the west must seek market outlets at considerable distances. This involves costly marketing and transportation expenses.

CALIFORNIA

Apples are grown in all but five of the 58 California counties, but more than 80% of the state's total commercial production is centered in two relatively small coastal areas: the Sebastopol district in Sonoma County and the Watsonville district, largely in Santa Cruz County.

Sebastopol: This district is noted for its production of the **Gravenstein,** the principal summer apple in the U. S. Sonoma County accounts for nearly 90% of the crop. Harvesting in the Sebastopol district begins anywhere from the latter part of June to the first of August, depending on the season. The bulk of the crop is marketed within four to six weeks with a substantial proportion shipped out of state.

Fall and Winter varieties in this district are less important than the Graven-

stein. Nevertheless they represent about 35% of the total acreage. Much of the fall and winter variety acreage is located in the same orchards with the Gravenstein, since this variety requires cross-pollination to set good crops. Jonathan, Delicious, Yellow Newtown and Rome Beauty are the most important of the many varieties grown. They are sold mainly in the state for fresh use and for processing.

Watsonville: This district contrasts with the Sebastopol area in that approximately 60% of its bearing acreage is **Yellow Newtown.** About the same quantity of Newtowns have been produced in this district as Gravensteins in Sonoma County. This winter variety is harvested during the fall months; marketing extends through to the following summer.

Most important secondary variety in the Watsonville district has been **Bellflowers.** However, acreage of this variety has steadily declined for many years, while **Delicious** varieties as a group have moved upward. In 1947 bearing acreage was practically the same for both. (Combined acreage amounted to a little less than half the acreage of Newtowns.) With a relatively large nonbearing acreage about to come of bearing age in the next few years, the Delicious varieties will soon exceed Bellflowers.

In most years, nearly all fresh sales of apples from this district are within the state.

Other Districts: Commercial apple districts of lesser size include Anderson Valley in Mendocino County, spotted foothill areas along the east side of the Central Valley, the Yucaipa district in San Bernardino County, and several small areas in San Diego County. Most of the apples produced in these districts are winter varieties sold locally or shipped to metropolitan areas in the state as mountain apples. Growers take pride in the color attained by their red varieties.

One district in Tulare County has the largest acreage of the early summer **White Astrachan** variety in the state. Harvesting of this variety begins a little earlier than Gravensteins and the greater portion of the crop is sold in the Los Angeles market before the Gravenstein season.

Table 2: CALIFORNIA APPLE ACREAGE BY IMPORTANT COUNTIES

County	1936			1947		
	Bearing	Nonbearing	Total	Total	Bearing	Nonbearing
	acres	acres	acres	acres	acres	acres
Humboldt	492	35	527	333	332	1
Mendocino	941	142	1,083	1,058	1,058	0
Sonoma	15,305	1,029	16,334	14,214	13,768	446
Napa	661	62	723	602	600	2
Santa Cruz	10,177	684	10,861	10,414	9,152	1,262
Monterey	1,892	42	1,934	967	771	196
Butte	650	201	851	508	490	18
Tuolumne	591	4	595	563	500	63
Tulare	318	66	384	568	428	140
Los Angeles	580	49	629	374	370	4
San Bernardino	1,186	51	1,237	752	682	70
San Diego	455	53	508	569	512	57
Others	4,298	270	4,568	3,330	2,888	442
Total	37,546	2,688	40,234	34,252	31,551	2,701

Acreage Trends

All Varieties ● **Bearing acreage decreased 21,000 acres from 1926 to 1947. New plantings have not kept pace with removals. 3,000 more bearing acres probably lost by 1960 unless new plantings are increased.**

Bearing acreage in California reached its peak in 1926 when a little over 52,500 acres were recorded by the California Crop and Livestock Reporting Service. In the next ten years it declined some 15,000 acres, or nearly 30%. The decrease was less rapid for the next seven years with a drop of 6,000 acres, or 16%. From 1943 through 1947 bearing acreage remained almost constant, ranging between 31 and 32 thousand acres. This recent leveling off was largely due to higher wartime returns for apples, which retarded the removal of many less profitable trees. With the adjustment of apple prices to lower levels the decline in acreage will probably continue.

High returns for apples during the war failed to stimulate any large increase in the rate of new plantings. Table 3 shows that nonbearing acreage in the state in 1947 amounted to only 7.9% of total acreage. Since nonbearing apple acreage is a sum of seven years of plantings (as esti-

Table 3

ACREAGE AND AGE DISTRIBUTION OF PRINCIPAL APPLE VARIETIES IN CALIFORNIA

Of the six varieties with more than 1,000 bearing acres in 1947, three showed an increase in bearing acreage since 1936 and three a decrease. All Delicious varieties as a class showed the greatest increase (50%) while Bellflowers the greatest decrease (45%). Both Gravensteins and Newtowns decreased about 15% during the 11-year period. As of 1947, nonbearing acreage of Gravensteins, Newtowns, and Bellflowers was far from normal replacement requirements.

Variety	Bearing acreage					Nonbearing acreage	
	1936	1947	Change from 1936	Age distribution 1947		1947	Per cent of total variety
				23 years or older	33 years or older [1]		
	acres	acres	per cent	per cent	per cent	acres	
Bellflower	2,963	1,633	−45	97	72	12	0.7
Delicious	2,044	3,045	+49	40	9	1,526	33.4
Gravenstein	11,446	9,706	−15	87	48	26	0.3
Jonathan	1,039	1,099	+ 6	65	35	103	8.6
Newtown	7,970	6,847	−14	85	67	326	4.5
Rome Beauty	1,391	1,570	+13	60	20	200	11.3
Others	10,693	7,651	−28	80	47	508	6.2
Total State	37,546	31,551	−16	79	47	2,701	7.9

[1] Estimated.

mated by the California Crop and Livestock Reporting Service), average annual plantings for the seven years ending 1947 amounted to approximately 385 acres, or a little over 1% per year.

At the same time nearly 50% of the present bearing acreage is an estimated 33 years or older. Assuming 50 to 60 years to be the average productive life of these trees, we would expect an average annual rate of retirement of roughly 700 acres. This is over 300 acres per year greater than average plantings in recent years. Unless rates of plantings increase substantially in the next few years, bearing acreage in the state might be reduced as much as 3,000 acres by 1960 due to age alone.

Some younger trees will also undoubtedly be pulled out for other reasons, as has occurred in the past. From 1936 to 1947 more than 2,100 acres of apples under 33 years of age went out of production: an annual loss of nearly 200 acres per year. Continuation of this loss coupled with removal due to old age could easily result in a reduction to some 26,000 bearing acres in the state by 1960.

Individual Varieties ● **Bellflowers, Yellow Newtowns, Gravensteins declining; Delicious varieties continue acreage gains; Jonathans will hold steady over next ten years; Rome Beauties may increase slightly.**

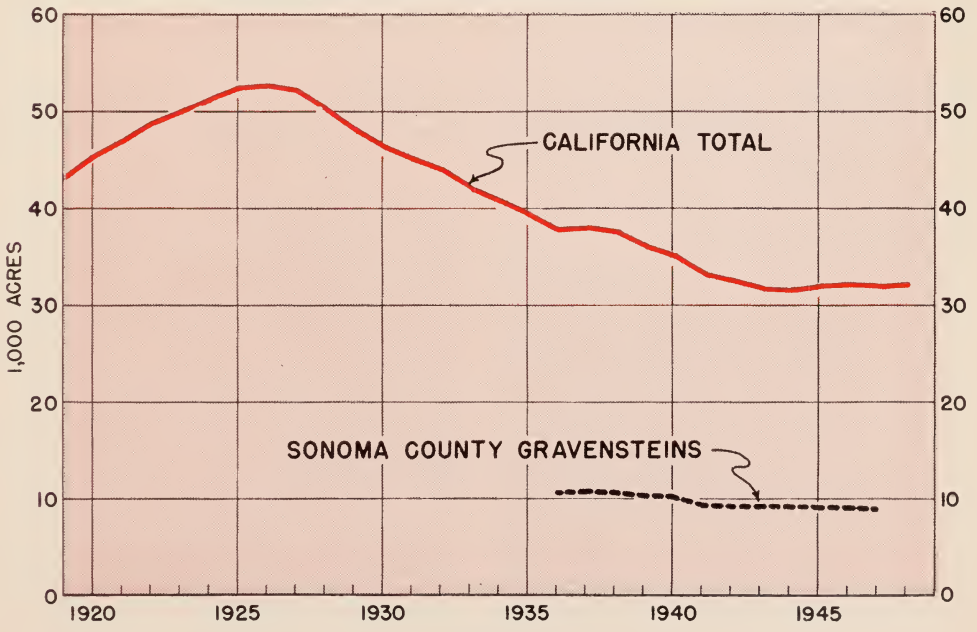
BELLFLOWERS

These average older than any other of the main varieties, with an estimated 72% of present bearing acreage 33 years or older, and 97% 22 years or older as of 1947. This variety has been losing popularity for many years, and a decline in acreage at about the same rate as from 1936–1947 is likely to take place during the next ten years.

YELLOW NEWTOWNS

These average nearly as old as Bellflowers, both having been planted extensively in the Watsonville district before 1900. The present age distribution of

Fig. 1. Bearing acreage of California apples.



Yellow Newtown trees shows that unless there is a higher rate of new plantings, bearing acreage of this variety may drop as much as one third in the next 11 years, or at more than twice the rate of the last 11 years. Favorable prices during the war probably retarded removal of some of the older acreages.

GRAVENSTEINS

This apple industry in Sonoma County developed somewhat later than the Watsonville Newtown. Table 3 notes that only half of the bearing acreage of Gravensteins was over 33 years of age in 1947. Another 40% of the 1947 bearing acreage was between 23 and 33 years of age, indicating heavy plantings between 1915 and 1924. Gravenstein acreage will not decline as rapidly due to old age as either Yellow Newtown or Bellflower. Still, tree ages point to a decrease of some 2,500 acres—25% of the 1947 acreage—in the next 15 years. An even greater decrease is possible if Gravensteins again become only as profitable as they were just before the beginning of World War II.

DELICIOUS

More than 50% of California's apple plantings in recent years have been of the Delicious varieties. The increased plantings of these varieties resulted in a nonbearing acreage accounting for one third of their total bearing acreage in 1947. Since only a small proportion of the present bearing acreage of Delicious is 33 years or older, the rapid increase in bearing acreage of these varieties is expected to continue for at least another seven years.

JONATHANS AND ROME BEAUTIES

Bearing acreage of Jonathans probably will not change much in the next ten years. Rome Beauties are likely to show a slight increase, if recent planting rates continue.

Production Trends

All Varieties • **Long term trend, following acreage, was up until 1930, down until World War II. Short term upward trend is not expected to continue.**

The trend in total production of apples in California follows the acreage trend, and was upward until about 1930. The largest crop on record—314,000 tons in 1928—occurred two years after bearing acreage had reached its peak. From about 1930 to the beginning of World War II California's apple production declined; 1939–1942 marked the lowest four consecutive years of production since the peak, with a 185,000-ton average (see figures 1 and 2). This was approximately 25% below the 250,000-ton average for the four consecutive years of highest production, 1928–1931.

The short term trend in total production appears to have turned upward after 1942 due almost entirely to increased yields of Gravensteins. This situation is not expected to continue. A return to the long term downward trend is likely within the next ten years in view of the probable decline in bearing acreage; and lower yields per acre will further contribute to decreased production if apple prices fall to unprofitable levels.

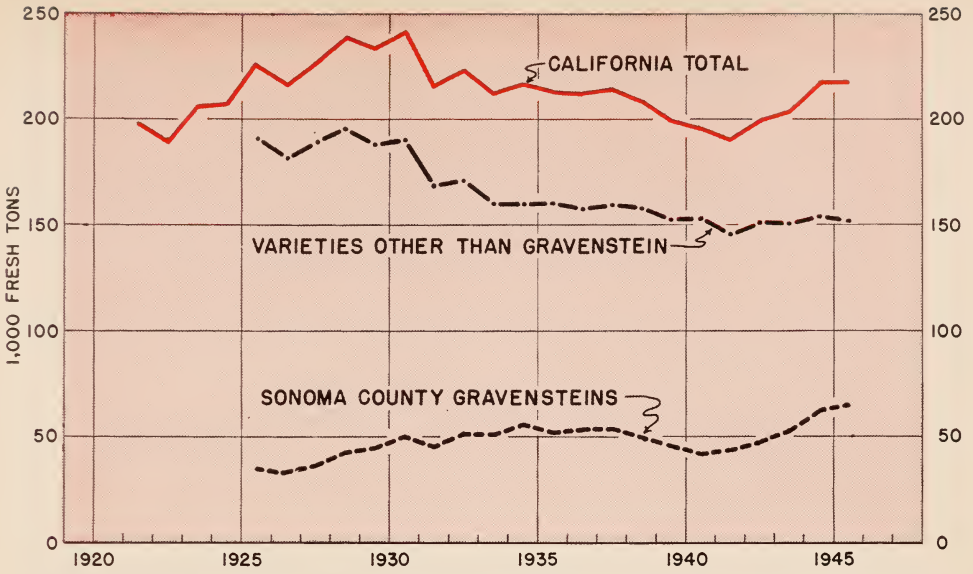


Fig. 2. Trends in production of California apples. Six-year moving averages.

Gravensteins **continued upward to 1937, dropped to 1942, rose to a peak in 1947. Higher yields per acre responsible for wartime increases. Price levels, bearing acreage will affect future production.**

Gravenstein production continued upward after 1930 when the combined total for all other varieties was on the decline. The largest Gravenstein crop before World War II (1937) amounted to 80,000 tons, of which an estimated 10,000 tons went unharvested. Thereafter the short term trend dropped for about 5 years, with the 1942 crop the smallest in 17 years. During 1942–1947 the trend in production then reversed itself, at least temporarily, and climbed to a point higher than any previously reached. Both the 1945 and 1947 crops exceeded the earlier 1937 peak.

YIELDS

The higher production of recent years was obtained with about 15% fewer bearing acres than in 1937. Higher yields per acre (figure 3) were responsible, indicating that **price** was the decisive factor in the changing of the short term trend in Gravenstein production during the past ten years. In the four years 1937–1940 growers received about $8.70 per ton, a lower average price than for any other four-year period on record. Gross income averaged only about $40 per bearing acre per year. This resulted in cultural neglect on many of the orchards and, consequently, lower production. But with higher wartime prices it again became profitable for growers of such orchards to follow good cultural practices and increase their yields. Meantime a larger proportion of the trees had reached full bearing age: productive capacity of the present Gravenstein acreage was greater than it had been ten years before.

YEARLY FLUCTUATIONS

The Gravenstein variety in Sonoma County has a pronounced tendency towards alternate bearing. Figure 3 (next page) compares the fluctuation in Gravenstein yields from year to year with that of the combined yields of other varieties. Wide variations in total production caused by fluctuating yields add to

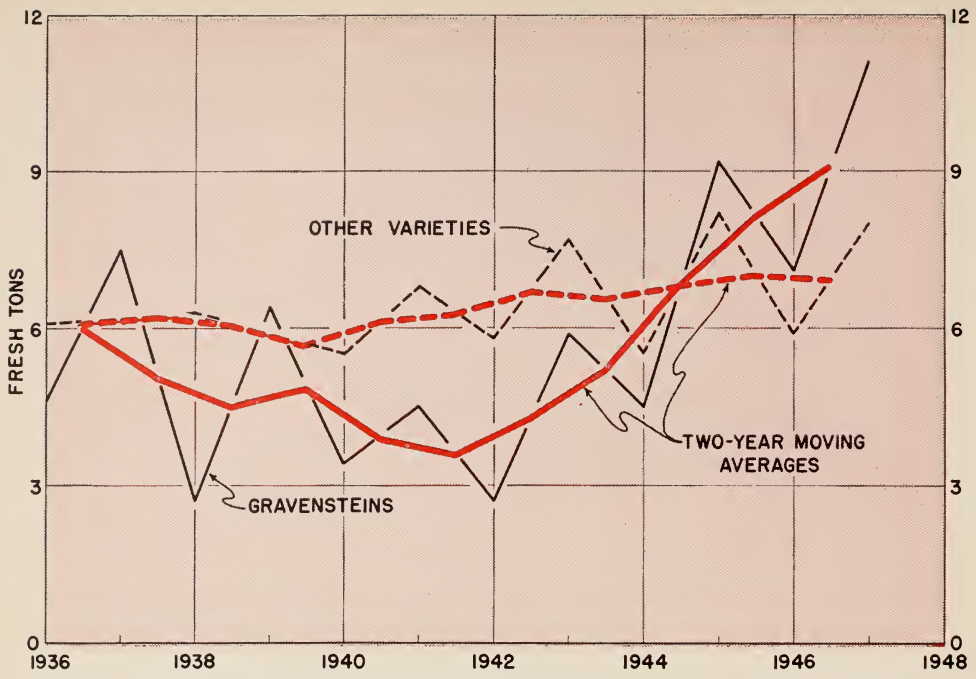


Fig. 3. Yields per bearing acre: California Gravensteins and other varieties.

the complexity of the marketing problem (figure 5).

OUTLOOK

Gravenstein production in the foreseeable future is not likely to exceed the high level attained in the last few years. Probably it will level off for a few years and then decline as bearing acreage is reduced. But if prices in the next few years fall to unprofitable levels for a large proportion of the acreage, as they did before World War II, total production could again be influenced by cultural neglect.

Other Varieties **have been downward since 1928. Temporary wartime increases will not reverse long term trend. White Astrachans gaining.**

Production data on individual varieties other than Gravenstein in the state have not been recorded over a long enough period of time to allow an analysis of trends. But we can assume that the long term trend of their total production will tend to follow changes in bearing acreage. We expect the next 15 years to show a considerable fall in production of Yellow Newtowns and Bellflowers. Delicious varieties should show a relatively large increase.

The long term trend in combined production of varieties other than Gravenstein has been downward since the 1928 peak. Slight increases in yields per bearing acre during the years of high wartime prices temporarily arrested the downtrend. Total production, however, could easily fall 20,000 tons below current levels in the next 15 years.

WHITE ASTRACHANS

Production of the White Astrachan in Tulare County has increased rather rapidly in recent years due to increased plantings. A bearing acreage of less than 200 in 1947 was small, however, compared with other principal varieties in the state.

Use of California Apples

General Picture ● **California dries proportionately more apples than other states, sells less fresh. Canning, freezing outlets find increased use in recent years.**

Fresh: Table 4 shows that a smaller proportion of the apples produced in California is sold for fresh use than in most other states and in the U. S. as a whole. Since apples for fresh use bring higher average prices than for processing, this situation partly explains why California grower prices have averaged 20% to 30% less than for the U. S. as a whole.

Dried: On the other hand California growers have dried a much larger proportion of their apples than growers in other states. In fact no other state comes close to California's large percentage.

Table 4: PROPORTION OF APPLES SOLD FRESH, 1939–1947[1]

	Per cent total sales
California	48
Washington	85
Other states	69
Total United States	71

[1] Commercial areas.

Fig. 4. California apple production and utilization, 1919–1948.

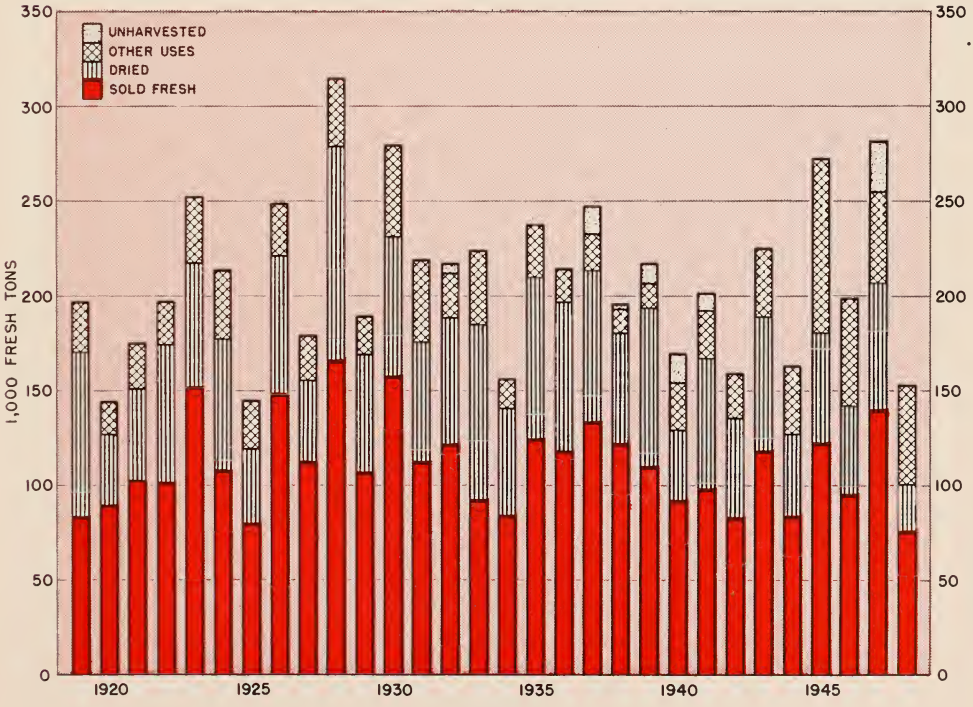


Table 5: UTILIZATION OF APPLES (COMMERCIAL AREA): CALIFORNIA, WASHINGTON, OTHER UNITED STATES, AND TOTAL UNITED STATES—1934–1937 AVERAGE COMPARED WITH 1944–1947 AVERAGE

	Average 1934–1937				Average 1944–1947			
	California	Washington	Other United States	Total United States	California	Washington	Other United States	Total United States
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Sold:								
Fresh	49.5	76.6	65.0	66.8	44.3	86.1	59.6	66.2
Dried	39.6	10.2	2.0	6.3	25.8	9.0	.8	5.3
Canned	0.0	5.4	7.5	6.5	5.8	1.7	12.0	8.3
Frozen	0.0	0.0	0.0	0.0	7.1	0.8	1.5	1.8
Other[1]	8.2	1.1	12.2	9.3	12.5	1.6	16.8	11.9
Farm home use	0.9	0.6	9.0	6.5	1.3	0.3	7.3	4.8
Not having value	1.8	6.1	4.3	4.6	3.2	0.5	2.0	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Mostly crushed for vinegar, cider and juice.

Nearly 40% of California's commercial apple production for the years 1934–1937 was dried, as against an average of 10% for the State of Washington and only 2% for the rest of the U. S. (table 5). During the recent 1944–1947 period California's proportion dried dropped to 26%. Actual tonnage did not drop as much as the percentage however, since total production during this period was somewhat higher. The State of Washington averaged about the same quantity of dried apples as California in recent years; but this amounted to only 9% of Washington's total commercial production.

Canned and Frozen: The percentage of California apples used for processing purposes other than drying has increased in the past few years, particularly for canning and freezing. These outlets have taken some of the apples which otherwise might have been dried or used fresh for commercial pie making. Despite its small percentage of the total crop, a much larger proportion of California apples were frozen in the four years 1944–1947 than were frozen in the other commercial apple-producing states.

Individual Varieties: Utilization varies somewhat among the different varieties of apples produced in California. A larger proportion of some are sold for fresh use; some are more suitable for canning or freezing. Utilization data, however, are available only for Gravensteins, and for the combined production of all varieties in the state. Total state utilization figures do not give a clear picture of fall and winter varieties as a class, because Gravensteins, which account for 25% of state apple production, differ from the fall and winter varieties in utilization. We can, however, get a representative picture of fall and winter varieties as a class by deducting Gravenstein utilization totals from state totals. This is done in the following analysis.

Table 6: SONOMA COUNTY GRAVENSTEIN APPLE UTILIZATION

Crop years	Total production	Shipped fresh	Dried	Canned	Frozen	Crushed	Unharvested
	tons	per cent	per cent	per cent	per cent	per cent	per cent
Averages:							
1924–1929	33,367	58	39	0	0	3	0
1930–1935	51,167	51	45	0	0	4	0
1936–1941	49,983	35	49	0	0	8	8
1942–1947	62,467	38	35	4	2	13	8
Annual:							
1945	88,400	38	35	3	2	22	0
1946	64,900	39	34	7	7	13	0
1947	100,400	32	31	3	0	7	27
1948	41,200	36	36	14	0	14	0

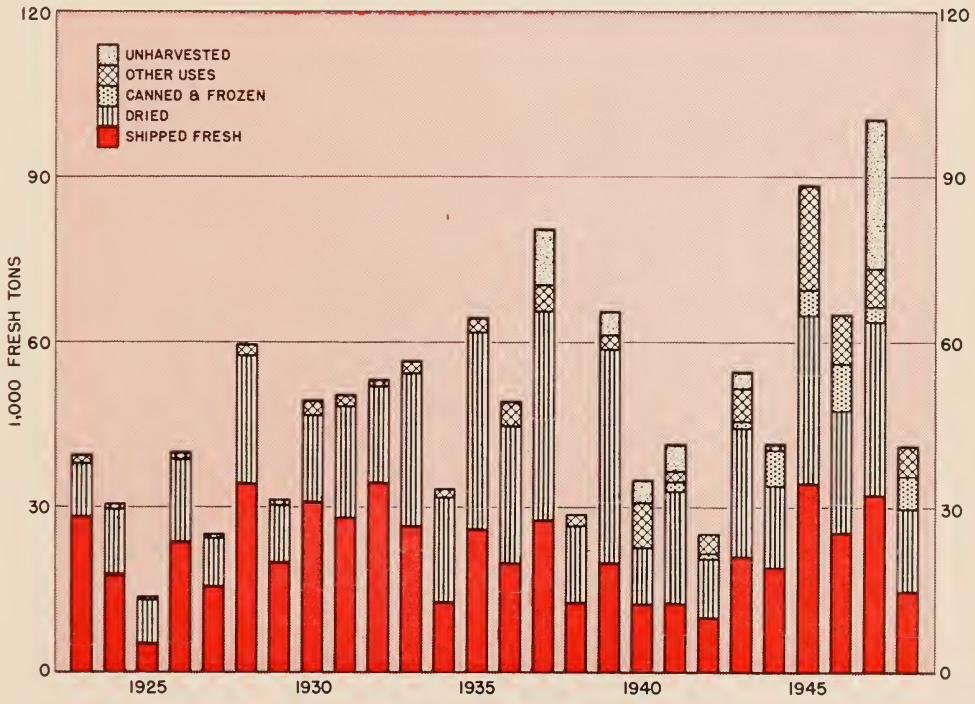


Fig. 5. Sonoma County Gravenstein production and utilization, 1923–1948.

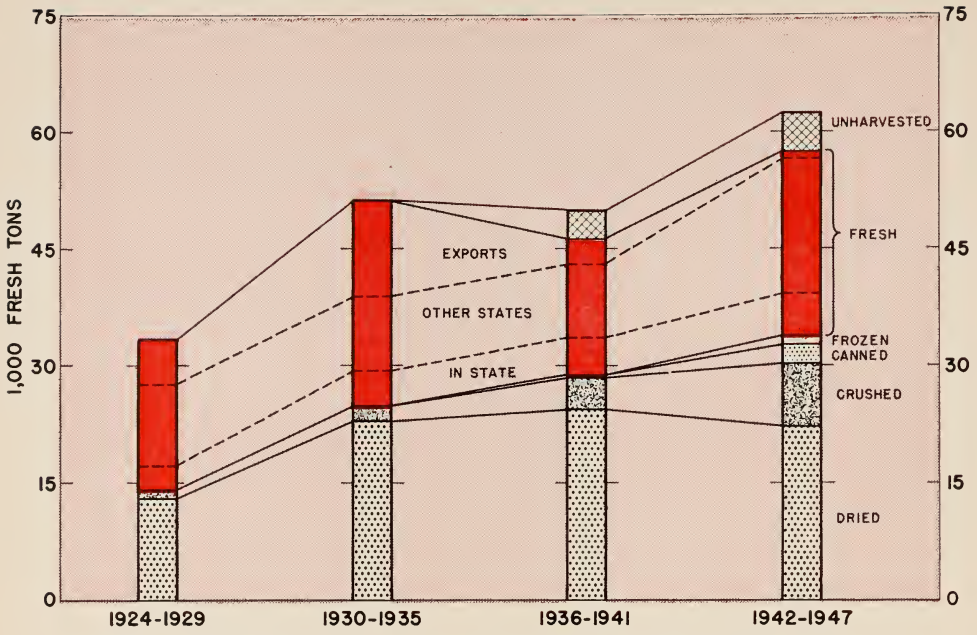
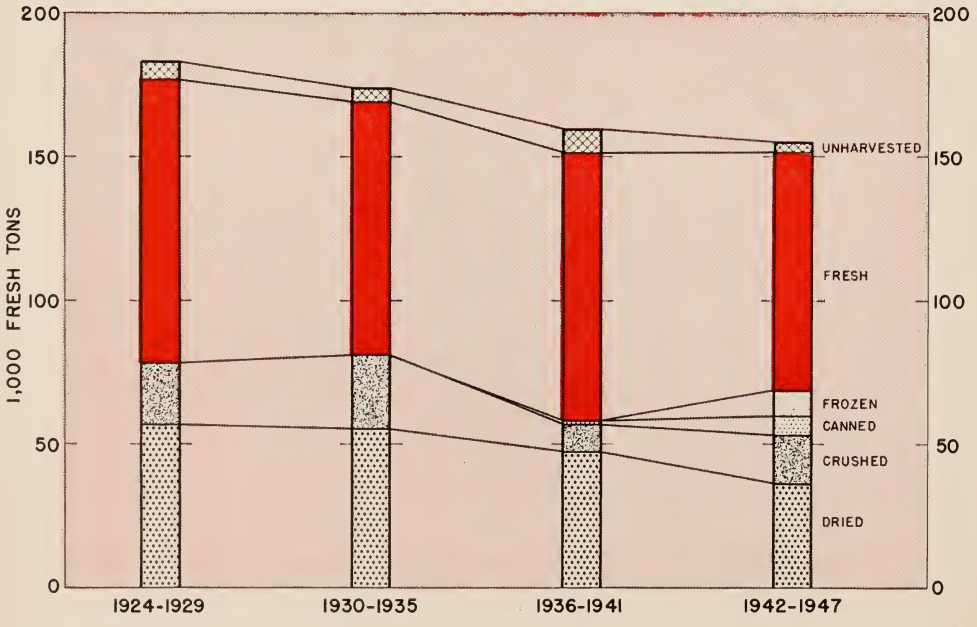


Fig. 6. Utilization of Sonoma County Gravensteins, 1924–1947, by six-year periods.

Fig. 7. Non-Gravenstein apple utilization, 1924–1947, by six-year periods.



FRESH SHIPMENTS

Gravenstein **fresh shipments have declined in relation to total production since 1924–1929, excepting wartime rises. Exports tapered off before World War II. Intrastate shipments have risen with population increases. Interstate shipments rose from 1943 on, after maintaining 20-year flat trend.**

Fresh shipments of Gravensteins have fluctuated greatly over the years, more or less in relation to the size of the total crop. From 1924 to 1947 they ranged from 5,000 to 34,000 tons and from 30% to 71% of total production. Dividing these 24 years into four periods of six years, we find:

(1) a decline in the proportion sold fresh during the three periods preceding World War II; and

(2) a slight increase over the prewar low in the fourth period, 1942–1947, although the total comes to only 38% as compared to 58% for the 1924–1929 period (see table 6). Fresh shipments were less than 40% of the total crop in every year but one of the nine years ending 1947.

It is interesting to note that usually only a slightly larger percentage of the crops have been shipped fresh in the so-called "off" years of production. Over the 14 years ending 1947 we find that the quantity sold fresh for the seven larger crops occurring every other year was 35% of total production, compared to 40% for the seven alternate years of low production. On the basis of harvested tonnage the difference is even less: the high years showing 39% as against 41% for the lows. Fresh shipments averaged about 25,000 tons of the 70,000 tons total production in the high years, as against only 16,000 of the 40,000 for the lows.

This situation can be accounted for at least in part by the fact that the Gravenstein in Sonoma County drops relatively large proportions of its fruit before and soon after maturity. Much fruit of shipping quality is thus lost before harvesting can be completed. Another factor limiting the per cent sold fresh lies in the proportion of the crop which runs to sizes too

Table 7: GRAVENSTEIN APPLES (SONOMA COUNTY) DISTRIBUTION OF FRESH SHIPMENTS

Crop years	Total shipments	Intrastate	Interstate	Exported
	tons	per cent	per cent	per cent
Averages:				
1924–1929	19,333	16	54	30
1930–1935	26,350	17	36	47
1936–1941	17,433	27	55	18
1942–1947	23,600	23	73	4
Annual:				
1945	34,200	20	77	3
1946	25,400	25	69	6
1947	32,200	30	64	6
1948	14,800	45	55	0

small for the domestic fresh market trade. It is significant that when large quantities of these small sizes (163s and smaller) were exported during 1935, total fresh shipments of Gravensteins were at their peak.

EXPORTS

Exports, principally to the United Kingdom, were an important outlet for fresh Gravensteins during the late 1920s and the first half of the 1930s. Shipments tended to be highest in the larger crop years when prices were lower. In the four peak years of exports, 1930–1933, an average of a little over 15,000 tons of Gravensteins was shipped to foreign countries: more than 50% of total fresh shipments for those years. Exports tapered off in the late 1930s with the approach of the war. Since 1940 they have been of little significance.

Slight increases over the wartime lows were noted in 1946 and 1947, but these give us no reason to expect the export market to provide much of an outlet for Sonoma County fresh Gravensteins in the next few years—particularly in view of world economic conditions.

DOMESTIC

Domestic fresh shipments of Gravensteins fluctuated between 4,000 and 23,000 tons during the period 1923–1944. They exceeded 20,000 tons only five times during the 22 years, of which only two occurred after 1928. From 1923 until the war there was no significant upward or downward trend in the quantity sold for fresh use in the U. S. Annual shipments averaged approximately 14,000 tons—about 40% of average total production in the 1924–1929 period, but only a little over a fourth of the crops grown between 1930 and 1941.

In the recent 1942–1947 period U. S. consumption of fresh Gravensteins averaged nearly 23,000 tons, or practically 9,000 tons more than in the preceding 17 years. Factors responsible for the increase were: greater consumer purchasing power, production of the two largest crops on record, and an extremely short 1945 apple crop in the eastern and central states. Domestic fresh shipments of slightly above 33,000 tons in 1945 were the highest on record. Shipments in 1947 were around 30,000 tons, but these amounted to only about 30% of the total crop.

Domestic consumption of fresh Gravensteins in 1942–1947 was thus considerably above prewar levels. Nevertheless it only accounted for 36% of the 62,500-ton average production during the period.

Intrastate: Fresh shipments of Gravensteins within California have ranged from 2,000 to nearly 10,000 tons. The trend in California consumption seems to have followed population increases. From 1924 to 1929 an average of 3,000 tons was consumed; from 1942 to 1947, 5,400 tons, including over 6,000 tons in 1945 and 1946 and nearly 10,000 tons in 1947.

Fresh tonnage consumed in California, however, has been of minor importance compared to fresh shipments out of state. In 1942–1947 California consumption of fresh Gravensteins accounted for just 24% of total domestic fresh shipments and only 9% of total production. The upward trend in intrastate shipments will probably continue with the increasing state population.

Interstate: Fresh Gravenstein shipments to other states maintained a flat trend during the 20 years ending 1943 with an average of about 10,000 tons, although they varied a great deal from year to year. Shipments then jumped 75% to an average of 17,300 tons for the six-year period 1942–1947. 26,500 tons were shipped in 1945, the peak year. Even so, the interstate market still absorbed only 28% of total production; although this was a definite gain over the small 19% averaged in the six years before 1942.

Whether interstate fresh shipments will continue at 1942–1947 levels cannot be foreseen. Factors which will have an important bearing on the quantity shipped include these:

1. **Size** of the Gravenstein crops.
2. Consumer **purchasing power.**
3. **Production** of early apples in eastern states.
4. **Quantity** and **price** of competing fruits.
5. **Marketing** and **trade promotion** practices of the Gravenstein industry.

Many growers expect the state marketing order (under which the industry operated for the first time in 1948) to help solve some of the marketing problems of past years.

Other Varieties **● 90% of fresh shipments sold in California; now meeting increased competition from Washington apples. Fresh sales will decline with total production.**

Fresh sales of varieties other than Gravenstein as a group averaged 50% to 60% of total production in the 25 years ending 1948.

Proportions sold fresh have changed very little over the years. Thus the total quantity shipped fresh has declined along with the decline in total production. From 1924 to 1929 shipments averaged 99,000 tons; from 1942 to 1947, 83,000 tons. Available data since 1938 show that over 90% of the tonnage sold for fresh use is consumed in California. Of the relatively small tonnage shipped out of state a portion has been exported. The 1945 crop year was an unusual exception due to the extremely short apple crop in the eastern states and the good crop in California. In that year some 34,000 tons, or nearly two fifths of total fresh shipments, went out of state.

Of the numerous fall and winter varieties produced in California some are more desirable for fresh market than others. Some go almost entirely to drying or crushing because there is no other market demand for them; a large proportion of others, such as Delicious, are sold for fresh use.

COMPETITION FROM THE NORTHWEST

Fall and winter variety shipments within the state have dropped although state population has risen. Increasing competition with northwestern apples is an important cause. California's population has nearly doubled in the past 20 years; the volume of fresh apples from Washington has more than doubled in the same time. Combined out-of-state unloads in the San Francisco and Los Angeles markets averaged about 1,800 cars during 1927–1932, as compared to about 2,700 during 1941–1946.

OUTLOOK

The proportion of present fall and winter varieties sold for fresh use is not likely to increase unless trade and consumer preferences change. Total fresh shipments of these varieties are likely to decline along with production.

Smaller proportions will be shipped fresh if growers should impose more rigid control on the quality offered for fresh sale.

Per Capita Fresh Consumption **of apples in the U. S. has declined, but per capita consumption of all fresh fruits remains the same. Local and northwest fall and winter varieties share California's market almost equally. Local Gravenstein consumption in season only one quarter fall and winter consumption.**

U. S. FRESH CONSUMPTION

"An apple a day keeps the doctor away"—but not for the American consumer, who seems to be taking the old adage much less seriously today than he did 35 years ago. Per capita consumption of fresh apples in the U. S. has declined from 69 pounds (1911–1916 average) to 33 pounds (1942–1947 average). But per capita consumption of all fresh fruits has remained at about the same level. Consumption of fresh citrus fruits has increased as fresh apple consumption has decreased (figure 8).

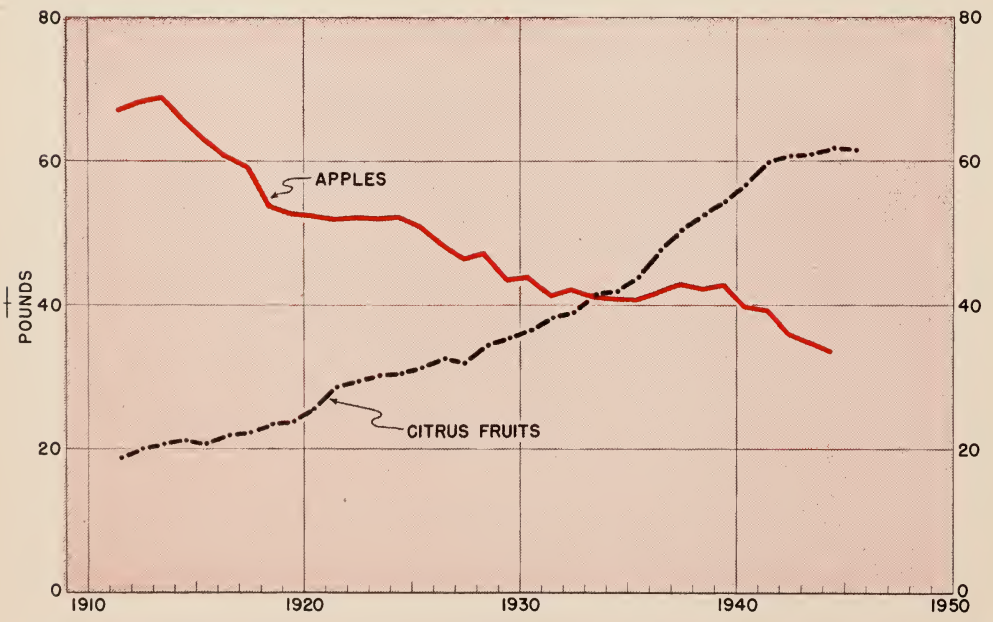
Whether fresh apples will continue to lose ground in the diet of the American consumer cannot be foreseen. As population increases, the total quantity consumed in the U. S. could remain as it is with some decrease in per capita consumption; moreover the total quantity could increase with population if per capita consumption held level. But at the same time citrus fruit production will probably continue upwards for many years, thus intensifying competition in the fresh fruit market.

CALIFORNIA FRESH CONSUMPTION

Californians appear to use about the same amount of fresh apples as the average of the rest of the country. Consumption in the state during 1942–1947 was about 33 pounds per person, 14 pounds (40%) of which were apples shipped into California.

Fall and Winter Varieties: During 1942–1947 Californians used nearly as many fresh apples from the northwest as they did of their own fall and winter varieties. Fresh sales by California grow-

Fig. 8. Trends in U. S. per capita consumption of fresh apples and citrus fruits. Six-year moving averages.



ers averaged 72,000 tons. Meanwhile *total* fresh shipments into California averaged 62,000 tons, the bulk of which were from Washington. During this time California growers took lower prices for their fresh apples and turned a larger proportion into the lower-value processing outlets.

California's population rise has been of greater advantage to Washington apple growers than to California growers. In future, Washington will look for an even greater market in California to offset decreasing sales in eastern states.

Gravensteins: California consumption of fresh Gravensteins in season is estimated at only one fourth of fall and winter variety consumption. It has varied from about ⅔ to better than 2 pounds per capita during the past ten years. Higher consumption has usually accompanied larger crops. The ten-year average 1938–1947, approximately 1.2 pounds, was less than four per cent of the total annual per capita consumption of fresh apples in the state.

Chief factors responsible for the low consumption of Gravensteins appear to be:

(1) **Competition** with many other fresh fruits on the summer market.
(2) **Poor color and quality** of a large proportion of Gravensteins offered to consumers.
(3) **Hot weather** during marketing season, when demand is less for apples for cooking.
(4) **Lack of development** of all potential markets in the state.

DRIED

All California Varieties ● Drying has been chief outlet for apples which cannot be sold for fresh use at more favorable prices or not suitable for fresh sale. 35% of California's apple harvest dried 1928–1939; 25% during World War II.

Since 1918 the annual quantity of dried apples produced in the state has ranged between 16,000 dried tons (1928) and 4,800 dried tons (1940). Highest production over any 12-year period was reached during 1928–1939 with an average of 10,800 tons. This accounted for 44% of the estimated total U. S. production of dried apples in those years, and 35% of the total harvested production of all apples in California. At the same time an estimated 40% of the combined tonnage harvested in the two principal apple districts of Sonoma and Santa Cruz counties (where most all of California's apple-drying facilities are located) were dried.

During World War II and through 1947, increased demand for fresh, canning and freezing apples resulted in a smaller available proportion for drying. The quantity dried in these years ranged between 5,600 and 9,000 tons and averaged a little over a fourth of total harvested production.

Gravensteins ● A larger proportion dried than the average for other varieties in the last twenty years. Prices have been low.

In the 12 years following 1927 drying became an increasingly important outlet for Sonoma County Gravensteins: in 1928–1931 an average of 37% of total production, or 17,500 fresh tons, were dried; in 1932–1935, 49%; and in 1936–1939, 55% of harvested production, or 29,000 fresh tons.

Peak production of dried Gravensteins was reached in 1939 when 39,000 fresh tons (nearly two thirds of that year's harvested production) went to the dryers. The average price received by growers for this large tonnage was estimated at $3.75 per fresh ton, delivered to the dryers: scarcely more than enough to pay

for the costs of harvesting and hauling. Growers received an even lower price in 1940 despite the fact that only 10,000 tons of Gravensteins were dried. This was due to the loss of export markets at the beginning of the war. Increased demands from more profitable outlets during 1940–1946 then brought the proportions of Gravensteins dried below the 1936–1939 levels. However, the drying outlet still accounted for 40% of harvested production.

Total U. S. Production **accounted for 90% of world dried apple production before the war, 70% during the war. U. S. exports have declined since 1933, are not likely to regain former levels for some years. U. S. domestic consumption has increased with decreasing exports but 1945–1947 figures give no key to future consumption. Total production ahead not likely to average more than two thirds prewar average.**

U. S. AND WORLD PRODUCTION

In the decade 1930–1939 the U. S. produced 20–26,000 tons of dried apples annually. In 1940, due to curtailed export conditions, only 12,000 tons were produced. This was the lowest dried production in over 20 years. But after our entry into the war, increased military demands and increased demands for exports (mainly to Great Britain) resulted in an average production of 20,800 tons for 1942, 1943 and 1944. The average since the war has been considerably below this figure. Only 14,000 tons of the short 1945 crop were dried. The 17,000 tons produced in 1946 exceeded the decreased postwar demand. The surplus situation which developed by the 1947 season resulted in low prices and a drop in production to 14,900 tons.

In the decade 1930–1939 the U. S. accounted for 90% of world commercial dried apple production. During the war years 1941–1944 it accounted for only

Table 8: ESTIMATED WORLD PRODUCTION OF DRIED APPLES

	California	Northwest	United States	Canada	Australia	Other countries[1]	World total
	tons	tons	tons	tons	tons	tons	tons
Averages:							
1930-1939	10,780	8,100	23,500	2,110	460	110	26,180
Annual:							
1940	4,800	5,500	12,000	3,000	600	200	15,800
1941	8,800	6,000	17,300	4,300	900	100	22,600
1942	6,700	9,500	21,500	5,900	1,300	300	29,000
1943	8,940	8,300	20,000	6,500	1,900	200	28,600
1944	5,600	11,800	21,000	6,700	2,300	400	30,400
1945	7,290	6,600	14,100	800	2,000	300	17,200
1946	6,000	9,200	17,200	2,200	2,000	300	21,700
1947	8,500	5,800	14,900	3,300	1,500	400	20,100

[1] New Zealand and Union of South Africa.

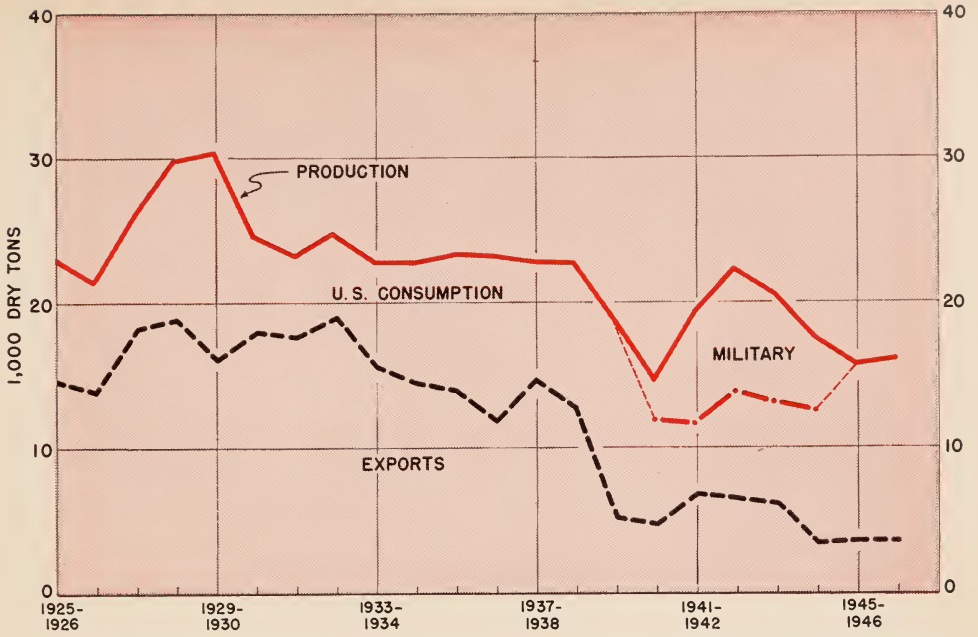


Fig. 9. Dried apples: U. S. production and exports. Two-year moving averages. The difference between total production and exports equals the consumption of dried apples in the U. S.

70%. World totals, however, averaged about the same for both periods.

Other Countries: Canada's commercial dried apple production takes second place to the U. S.; Australia comes third. During the war both countries increased their production to as much as several times their prewar level, mainly because of restrictions on fresh shipments. Production has since fallen below wartime highs (table 8).

U. S. EXPORTS

European countries have been the principal market for U. S. dried apples. Total U. S. exports were highest between 1928 and 1933 when they averaged about 18,000 tons.

Prewar: During 1930–1933 exports represented ¾ of total U. S. dried apple production. Nearly half of these—an average of 8,605 tons—went to Germany. No other country before or since has taken close to this quantity of dried apples. But in 1934 Germany drastically reduced her imports; two years later and up until the war she took an average of less than 1,000 tons.

France and the Netherlands together received an average of 5,300 tons from 1930 to 1933, or a little over a fourth of our exports. These countries increased their imports of dried apples slightly between 1934 and 1939, a portion of which probably found their way into the German market.

Of other European countries Sweden took an average of 1,800 tons of dried apples during the ten years 1930–1939. A little over 300 tons of this was mixed with other dried fruits known to the trade as "salad." Sales to the United Kingdom were of minor importance and averaged less than 1,000 tons before World War II, Canada and Australia supplying a substantial proportion of British requirements.

Wartime and After: Following the curtailment of imports by Germany in 1933 the trend in U. S. exports was down-

Table 9: UNITED STATES EXPORTS OF DRIED APPLES BY PRINCIPAL COUNTRIES OF DESTINATION—YEARS BEGINNING JULY 1

	Dried tons							
	Total exports[4]	United Kingdom	Germany	Netherlands	France	Sweden	Other European	Other than Europe
Averages:								
1930–1933	18,443	836	8,605	3,974	1,300	1,768	1,677	283
1934–1938	13,822	992	2,145	4,094	2,502	1,839	1,658	592
1941–1945	5,583	4,188	none	4	25	123	313	930
Annual:								
1945	1,981	272	none	22	1	134	1,004	548
1946[1]	5,273[2]	2,192	none	54	none	2,130	276	601
1947[1]	1,850[3]	791	none	118	none	2	174	732

[1] Preliminary.
[2] Includes 20 tons to destination not named.
[3] Includes 35 tons to destination not named.
[4] Includes quantities "in salad" as follows: 1930–1933, 491 tons; 1934–1938, 481 tons; 1941–1945, 63 tons; 1945, 135 tons; 1946, 718 tons; 1947, 9 tons.

ward (table 9). During the war years 1941–1944, 80% of our total exports went to the British Isles under lend-lease, but this averaged only a little over 5,000 tons.

Total U. S. exports dropped to less than 2,000 tons for the 1945 short-crop year, with less than 300 tons going to the United Kingdom. Norway and Sweden together took about 400 tons; the rest was divided among many other countries. In 1946 dried apple exports again rose above 5,000 tons. Shipments to the United Kingdom were only about 2,000 tons, or 40% of the total. Sweden took over 2,000 tons, more than in any prewar year. But in 1947 her imports dropped practically to zero because of the lack of U. S. dollar exchange. France and the Netherlands received almost no dried apples from the U. S. between 1939 and 1947, except for some 500 tons of the 1944 crop.

Preliminary estimates on exports from the 1947 crop indicate that only about 1,850 tons were moved, of which the United Kingdom took approximately 800 tons.

Future U. S. Exports: Among the many factors that will affect our exports, these are important:

(1) **Quantity** produced in excess of domestic requirements.
(2) **Prices** of dried apples.
(3) **Economic,** political, and dollar exchange conditions of European countries.
(4) **U. S. Government policy** in the next few years with respect to purchases for foreign use (in the European Recovery Program).

In any event exports are not likely to approach the high level of the early 1930s for some years to come.

DOMESTIC CONSUMPTION

During the 1920s the U. S. used an average of approximately 10,000 tons of dried apples a year. In the depression years of 1930–1933, however, our consumption averaged only about 6,000 tons.

It then increased during the period 1933–1939 to about the same extent that exports decreased. In the war years, we used much larger quantities of dried apples than in any prewar period. This was due mainly to military use which took about 8,000 tons, or 60% of the 1941–1944 average; civilian consumption averaged only a little over 5,000 tons during the period.

Estimates, however, indicate that civilian use in 1945, 1946 and 1947 may have come near to 12,000 tons, or a little higher than just before the war. Whether these levels give us any key to domestic consumption in the next few years is difficult to say. The period 1945–1947 was far from normal. The 1945 apple crop was very short in all states except those on the Pacific Coast where practically all the dried apples were produced; some Pacific Coast dried apples may have replaced eastern fresh apples normally used by Eastern processors. In the 1947 crop year a surplus developed which was only relieved by government purchases. 3,700 tons thus bought were utilized by the Federal School Lunch Program.

Per Capita: U. S. per capita consumption of dried apples is extremely low compared to other major dried fruits. Its prewar average came to only .13 pounds annually, as compared to 2.30 pounds for raisins, 1.90 for prunes, 0.29 for peaches, and 0.21 for apricots. Dried apples represented only about 2% of all dried fruits consumed in the U. S.

Chops: U. S. production and consumption figures on dried apples include so-called *chops*—whole apples chopped and dried without removing cores or peelings. They are used primarily for further processing purposes, as in the making of apple butter.

We have no official data on the quantity of chops produced, but available information indicates that an average of about 3,000 tons was produced annually in the years before the war, and about 5,000 tons during 1941–1946 (excluding the short crop year 1945). Washington, chief producer of chops, reached peak production in 1947. The large surplus carried over from that year, however, resulted in a considerable reduction in the 1948 pack.

A relatively small quantity of chops have been made by California processors in recent years. Peak output, 1947, was estimated at 700 tons of which 500 tons were Gravensteins.

OUTLOOK

U. S. production of dried apples in the next few years will depend largely on

(1) the **quantity** of apples produced in the apple-drying districts which cannot be sold at higher prices for other uses; and

(2) whether the **price** is sufficiently attractive to induce growers and processors to harvest and dry those apples which otherwise might not be utilized. It is significant that in certain years before the war, large tonnages of California apples went unharvested mainly because growers' prices for driers' apples were too low to warrant picking and hauling. In 1947 a large proportion of the unharvested Gravenstein crop might have gone to the driers if the price had been slightly higher.

Unless conditions change materially from the present, U. S. production in the next few years is likely to average less than 15,000 tons, which is only about two thirds of prewar average.

CANNED

Canning of California apples has become important only in recent years with sauce as the main product. Present upward trend will continue.

From 1935 to 1940 the largest year's canning in California did not exceed 1,200 fresh tons. This compares with 9,000 tons in 1945, 18,000 in 1946, 15,600 in 1947, and 20,000 in 1948. Gravensteins accounted for approximately 2,900 tons in 1945, 4,400 in 1946, and 2,700 in 1947, and 4,800 in 1948.

There now appears to be an upward trend in California production of canned apple products, limited principally to apple sauce for both baby food and adult use. This is likely to continue for at least a few years.

California already consumes large quantities of canned apple products from other states. Many believe that our apple industry can meet competition from other states and thereby supply a larger proportion of our total consumption. The falling off in the demand for dried apples will also tend to stimulate canning demands for fruit which cannot be sold for fresh use. Canning, however, is more restricted than drying as to the varieties and grades which can be used. For efficient operation and quality pack, apples should generally be picked from the tree; windfalls are less suitable. Varieties thus far successfully used for applesauce include our two major varieties, Newtowns and Gravensteins.

FROZEN

Few California apples used for freezing before 1943. Heavy 1945 pack created surplus and financial loss. Freezing outlet not likely to be important in next few years.

In 1943, 7,000 tons of apples were frozen in California, in 1944, 9,000 tons, and in 1945 over 41,000 tons. This tremendous increase was due primarily to the very short apple crop in eastern and central states; also responsible were wartime price controls, limited tin for canning, and sugar rationing, all of which favored the freezing industry.

The record 1945 pack not only of frozen apple products but of all frozen fruits resulted in a burdensome supply. Quality of some of the pack was poor due to inexperienced processors, and by 1946 sugar was more plentiful. These factors contributed to widespread financial losses among freezing processors—particularly those who handled apples. In 1946 California's frozen apple output dropped back to the 1944 level. A still further drop in 1947 brought output below 1,000 tons.

Newtowns grown in the Watsonville district have been the principal apple used for freezing in California. Gravensteins have accounted for a very small proportion, with the exception of 1946. Before 1945 only a few hundred tons of Gravensteins were frozen, and even the 1,800 tons used in 1945 amounted to less than 5% of all apples frozen in the state that year.

In 1946 frozen Gravensteins jumped to 4,300 tons, about 45% of the state total. This increase took place before processors had become aware of the surplus situation, which developed unrecognized until the time the late varieties were harvested. In 1947 practically no Gravensteins were used for freezing purposes.

The frozen fruit industry is unlikely to offer an outlet for very large quantities of California apples in the next few years. Any longer-term outlook is indefinite at this time.

CRUSHED

Only a small proportion of California's production has gone to crushing. Proportion crushed will not change much if drying continues to bring better average prices.

Apples for cider, juice, vinegar, brandy, and the more recent "liquid apple" are classified as crushed. During 1942–1947 about 13% of the Gravensteins and 11% of the other varieties were crushed. Percentage of Gravensteins crushed has shown a gradual increase over the years, while other varieties as a class have shown no definite trend.

Cider and juice apples are usually of better quality than vinegar apples but of lower quality than those used for "liquid apple." This product requires apples free from worms, aphis and other insects. In the Watsonville and Sebastopol districts crushing affords an outlet for sizes which are too small either for fresh market or drying. For apples which cannot be sold for fresh use crushing is the only outlet in many foothill districts of the state where drying facilities are not available.

Grower **prices** for crushing are related to quality, the highest prices being paid for apples used for "liquid apple." Cider manufacturers have at times paid a premium for certain varieties. Although some crushing apples have returned growers the equivalent of driers' prices and even better, crushing prices have generally averaged lower over the years.

California apple prices have averaged lower than U. S. averages. Prices were relatively low until the war, rose sharply 1941–1945, then dropped sharply from peak. Gravenstein prices show greatest yearly fluctuations. Future prices will depend on consumer income and competition; are likely to average below wartime levels.

CALIFORNIA AND U. S. PRICES COMPARED

Growers in California have generally received lower prices for their apples than the average for all growers in the U. S. (table 10, next page). Two principal causes of this situation are:

(1) Lower prices received for sales of fresh fruit. Apples shipped out of state (mainly Gravensteins) incur higher marketing and transportation expenses than eastern apples. Eastern growers are able to sell at lower prices to the consumer and still obtain higher net farm prices.

Within California, **consumer preference** for red apples from the Northwest over our light-colored Newtowns and Bellflowers has been reflected in lower average prices for our winter varieties.

(2) A **smaller proportion** of California total production is sold for fresh use. Only 48% was thus sold during 1939–1947, as compared to 71% for the entire U. S.

ALL CALIFORNIA VARIETIES

Prices received by California growers for apples have fluctuated considerably over the past years. Yearly variations in

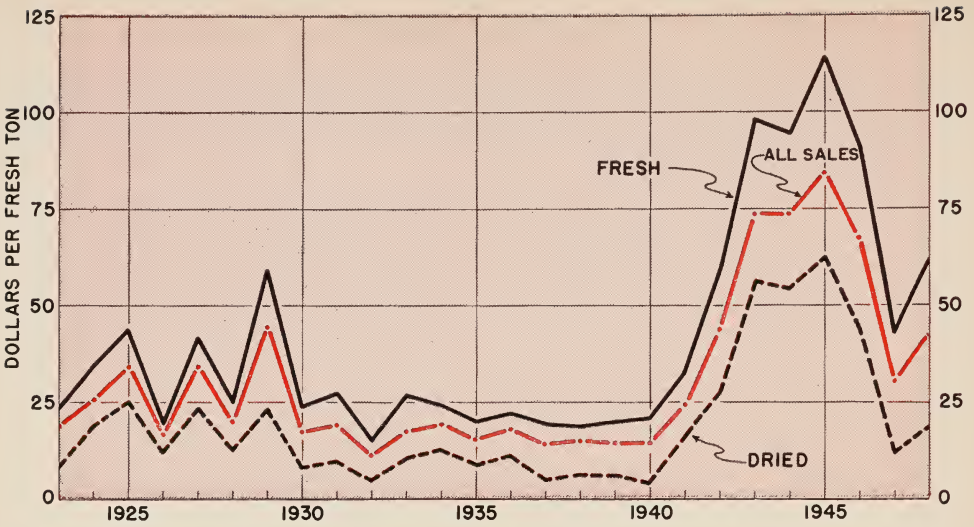


Fig. 10. California apples: average prices per ton received by growers 1923–1948 (naked fruit at first delivery point). Fresh apples have brought California growers roughly double the price of driers' apples. Apples sold for crushing have returned even less than for drying. In more recent years canning and freezing outlets have paid prices averaging halfway between fresh and dried.

Table 10: COMPARISON OF CALIFORNIA APPLE PRICES WITH UNITED STATES AVERAGES (SEASON'S AVERAGE PRICE FOR ALL SALES AS SOLD)

Crop years	United States	California	Per cent California is of United States
	dollars per bushel		
Averages:			
1924–1929	1.22	.80	66
1930–1935	.78	.46	60
1936–1941	.82	.48	59
1942–1947	2.04	1.65	81
Annual:			
1945	3.01	2.18	72
1946	2.46	1.78	72
1947	1.79	.93	52
1948	2.23	1.22	55

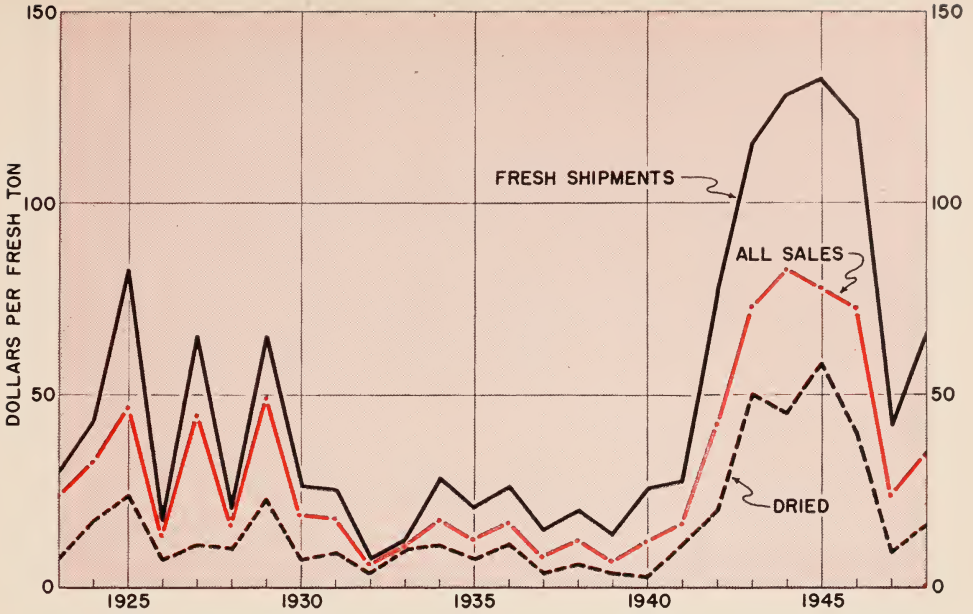


Fig. 11. Gravenstein apples: farm prices in Sonoma County 1923–1948 (naked fruit at first delivery point).

prices (figure 10) have largely followed changes in the size of California crops. Between 1922 and 1930 average prices for all apples sold ranged between $19 and $44 per ton; the 1924–1929 six-year average was $26.65. During the 1930s grower prices averaged only about $16 per ton. After the U. S. entry into the war apple prices jumped sharply and rose to a peak in 1945 when California growers received an average of $83 per ton for all fruit sold, the U. S. apple crop for that year being the shortest on record.

Prices in 1946 dropped back to only a little below the relatively high level of the 1943 and 1944 crops, but in 1947 they dropped almost as low as 1941. This brought California far below the U. S. average in grower prices, which decreased less than 10% from 1946 and were still close to 1943–1944 prices, which were triple the prewar average. Causes of California's much greater, drastic decline were:

(1) The **bumper 1947 crop,** particularly of Gravensteins.

(2) Burdening of the fall and winter market with **increased shipments** from Washington State.

(3) **Lowest returns for dried apples** since the 1940 low.

Nevertheless, average returns during the six years 1942–1947 were $62 for California growers, or practically four times the average for the 12 years preceding the war.

GRAVENSTEIN PRICES

Prices received by Gravenstein growers in Sonoma County have generally followed the pattern of the state average for all apples but fluctuations from year to year have been wider due to greater changes in the size of the crops, which have a decided influence on returns for fresh sales. In the six years before 1930, prices received for fresh sales ranged from $83 per ton for the short 1925 crop year to $17 per ton for the following above-average crop year; Gravensteins averaged a little above the state average

Table 11: GROWER PRICES AND FARM VALUE PER ACRE FOR CALIFORNIA APPLES (NAKED FRUIT AT FIRST DELIVERY POINT)

Crop years	Sold for fresh use	Dried	Crushed	Average all fruit	Farm value per bearing acre
	All varieties—dollars per fresh ton				dollars
Averages:[1]					
1924–1929	34.90	17.47	10.87	26.65	112.34
1930–1935	22.52	8.98	6.61	15.73	81.54
1936–1941	21.98	8.40	6.35	15.88	87.67
1942–1947	83.05	42.04	19.31	62.00	415.96
Annual:					
1945	114.20	62.50	18.80	83.30	717.28
1946	91.30	43.80	20.80	66.70	416.93
1947	44.60	11.70	11.30	30.80	248.39
1948	61.25	18.75	17.90	41.70	220.43
	Gravensteins				
Averages[1]					
1924–1929	39.73	13.74	11.07	28.72	[2]
1930–1935	18.80	8.02	6.54	13.51	[2]
1936–1941	20.09	6.08	4.65	11.30	50.79
1942–1947	102.85	37.53	14.69	62.78	393.78
Annual:					
1945	132.20	58.00	12.00	77.90	752.39
1946	121.70	40.00	14.00	72.80	516.97
1947	42.00	9.00	9.70	24.10	195.96
1948	65.00	16.00	8.90	34.90	187.01

[1] Weighted averages.
[2] Not available.

for the period. In the following low-priced 12-year period they fell somewhat under it. During the war Gravensteins again brought higher prices than the state average, mainly because of higher returns for fresh shipments. Since 1946, however, they have averaged lower.

OUTLOOK

In the next few years California grower prices are likely to average considerably below wartime levels. Normal crops will be more than adequate to take care of expected civilian fresh market requirements. The prices received will be greatly influenced by the proportion of future California production which can be marketed fresh, which depends on

(1) consumer income,

(2) competition with other fruits, and

(3) competition with apples from other states.

Apples which cannot be sold for fresh use will be dried or otherwise processed as long as returns or expected returns are sufficient to induce harvesting of the fruit.

Prices received for processing apples will probably be low as long as there is an exportable surplus of dried apples—and as long as U. S. Government purchase prices cover little more than harvesting and processing costs, as was true in 1947.

Costs and Earnings

Apple growing in California during the 12 years before World War II was one of the least profitable farm enterprises in the state. The war brought higher earnings, but current earnings have declined with the drop in prices from wartime highs. Current costs are twice prewar costs and will remain high in foreseeable future. Growers with efficiently operated orchards, and with varieties of a quality acceptable to the fresh market trade, can expect reasonable earnings ahead.

PREWAR

Data obtained from apple orchard management studies, conducted by the Agricultural Extension Service in Sonoma and Santa Cruz counties, shows that average returns to growers during the 12 years before World War II were far below total costs of production. Income in many cases failed to pay even cash operating costs. Only the best and most efficiently operated orchards provided a satisfactory living. Gravensteins were less profitable than winter varieties.

Table 12 compares estimated average **costs** of production per ton during 1936–1941 with estimated average **returns** for Gravensteins and Yellow Newtowns. Cost estimates are based upon well-managed orchards with above-average yields. Even under such conditions, returns for Gravensteins lacked about $5 per ton, or nearly a third, of meeting computed total production costs. Income above cash operating costs on 20 acres would have been $665 per year, providing there was no mortgaged indebtedness requiring interest payments, and providing the operator did as much of the work as possible. After allowances for annual replacement costs of equipment and facilities, the operator would have been left with a net income of only $110 to take care of living expenses and any interest payments.

Comparable estimates for 20 acres of Newtowns in Santa Cruz County show returns of approximately $2,250 above cash costs and $1,630 after allowing for both cash and depreciation costs.

CURRENT SITUATION

Production costs have increased greatly since the beginning of the war. Cost estimates based on a survey conducted by the author in the spring of 1948 show that present costs of producing apples are more than double prewar costs. Because of such increases, grower incomes above cash costs in 1947 were probably only half of what they were in 1941, even though 1947 prices were slightly higher. Under present cost conditions grower prices for apples in California **must average at least double prewar prices** if growers are to make even as poor a living as before the war.

OUTLOOK

Earnings from California apple production in the years immediately ahead will be considerably below those of the war period.

With lower average grower prices for fruit and with costs of production tending to remain high, some growers will have difficulty in maintaining a satisfactory living from their orchards. Many growers lost money on their 1947 apple crop. The 1947 picture might not represent what we are to expect in future, but it is a painful reminder of how quickly and greatly earnings can be squeezed when prices fall while costs remain high.

Table 12: ESTIMATED COSTS OF PRODUCTION, 1936–1941 AND 1947–1948[1]

	Gravensteins (Sonoma County)		Yellow Newtowns (Santa Cruz County)	
	Average 1936–1941	As of 1947–1948	Average 1936–1941	As of 1947–1948
	Dollars per fresh ton			
Hired labor	3.72	9.38	6.19	14.51
Other cash costs	4.69	9.38	4.27	9.40
Total cash costs	8.41	18.76	10.46	23.91
Depreciation on equipment and facilities	2.41	3.66	2.02	3.02
Total cash and depreciation costs	10.82	22.42	12.48	26.93
Interest on investment	2.73	3.01	2.29	3.13
Value of operator's labor	2.93	10.23	2.21	7.35
Total cost of production	16.48	35.66	16.98	37.41
Estimated average price received	11.30	.....	17.80	.....
Income above cash costs	2.89	.....	7.34	.....
Income above cash and depreciation costs	.48	.....	5.32	.....
Income above total costs	−5.18	.....	.82	.....

[1] Based upon well-managed, above-average, 20-acre orchards on which the operator performed as much of the labor as possible. With less than maximum operator's labor and/or more than 20 acres, cash costs would be higher. Average yields per acre were figured at 11 tons for Gravensteins and 15 tons for Newtowns. Management cost is excluded.

Conclusion: Faced with these problems, the wise apple grower will endeavor to adjust his management practices so as to reduce costs of production to a minimum, but always keeping in mind that yield per acre, as well as size and quality of fruit, are very important factors affecting profits. He will also give careful consideration to the management of his finances, both farm and personal living, and try to avoid any further indebtedness except for the purpose of increasing his efficiency of production.

The production of Gravensteins and Newtowns exceeds the current demand for fresh use. Some growers of these and certain minor varieties, but particularly of Gravensteins, might do well to shift at least a portion of their acreage into fall and winter varieties, such as Jonathans, Golden Delicious, and Red Delicious, which can be sold in California either ahead of or in favorable competition with fresh apples from the Northwest.

The better and more efficiently operated apple orchards, with varieties of a quality acceptable to the fresh market trade, should be reasonably profitable in future years.

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